CLAIMS

What is claimed is:

1. A method for fabricating a reflector for a central receiver system, the method comprising:

maintaining a mirror at a first temperature;

maintaining a facet at a second temperature; and

using an adhesive compound placed between the mirror and the facet to bond the mirror to the facet.

2. The method of claim 1, wherein the second temperature is greater than the first temperature.

3. The method of claim 1, wherein the first temperature is less than an operating temperature of the mirror when the reflector is in use.

4. The method of claim 1, wherein a material for the facet and a material for the mirror are selected to have different coefficients of thermal expansion such that the mirror experiences a compressive stress when the mirror and the facet are allowed to return to an ambient temperature during a manufacturing process.

5. The method of claim 1, further comprising forming the facet to provide a channel for enabling a cooling fluid to be flowed over a surface of the facet in thermal contact with the mirror.

6. The method of claim 1, further comprising forming the facet to include at least one cooling fin.

7. The method of claim 1, further comprising forming the mirror into a convex shape.

8. The method of claim 1, further comprising forming the mirror into a concave shape.

9. The method of claim 1, further comprising forming the facet in a triangular shape.

10. The method of claim 5, further comprising forming the facet to include a serpentine-shaped cooling channel.

11. A method for forming a reflector for use with a central receiver system, comprising:

maintaining a mirror having a first coefficient of thermal expansion at a first temperature;

maintaining a facet at a second temperature, wherein the facet has a second coefficient of thermal expansion substantially similar to the first coefficient of thermal expansion and the second temperature is greater than the first temperature;

placing a thermally conductive adhesive material between the mirror and the facet; and

allowing the adhesive to cure to bond the mirror and the facet together and in thermal communication with one another via the thermally conductive adhesive material.

12. The method of claim 11, further comprising forming the facet in a triangular shape.

13. The method of claim 11, further comprising forming the facet to include a cooling flow channel by which a cooling fluid can be routed thereover.

14. A method of forming a reflector in a manner that induces a compressive stress within the reflector when the reflector is at an ambient temperature, comprising:

providing a mirror at a first temperature;

heating a facet to a second temperature that is higher than the first temperature;

disposing a thermally conductive adhesive between one surface of the mirror and one surface of the facet;

holding the mirror and the facet in contact with one another with a tool while the adhesive is allowed to cure, to thus impart a compressive stress into the mirror as the facet cools; and

releasing the reflector from the tool, wherein the reflector has a compressive stress imparted thereto.

15. The method of claim 14, further comprising forming the facet with a plurality of cooling channels.

16. The method of claim 14, further comprising forming the facet with a plurality of cooling fins.

17. The method of claim 14, further comprising forming the facet with a triangular shape.

18. The method of claim 14, further comprising forming the facet with a honeycomb support structure.

19. A method for forming a reflector for a solar receiver system, comprising:

heating a facet to a first temperature in excess of a maximum operating temperature which the facet will experience during use with the solar receiver system;

placing a mirror adjacent the facet;

placing a thermally conductive adhesive on a surface of one of the mirror and the facet;

bringing the mirror and the facet into contact with one another through use of a tool such that the adhesive is disposed between the mirror and the facet, while the mirror is maintained at a second temperature less than the first temperature;

allowing the adhesive to cure such that the reflector is formed with a compressive stress imparted to the mirror; and

removing the reflector from the tool.

20. The method of claim 19, further comprising forming the facet in a triangular shape.

21. The method of claim 19, further comprising forming the facet with a serpentine channel for directing a cooling fluid over one surface of the facet.

22. The method of claim 19, further comprising forming the facet with at least one cooling fin.

23. The method of claim 19, further comprising forming the facet from steel.

24. The method of claim 19, further comprising maintaining the mirror at a temperature that is less than an operating temperature at which the mirror will experience during operation of the reflector.

25. The method of claim 19, further comprising forming the facet with a honeycomb support structure.